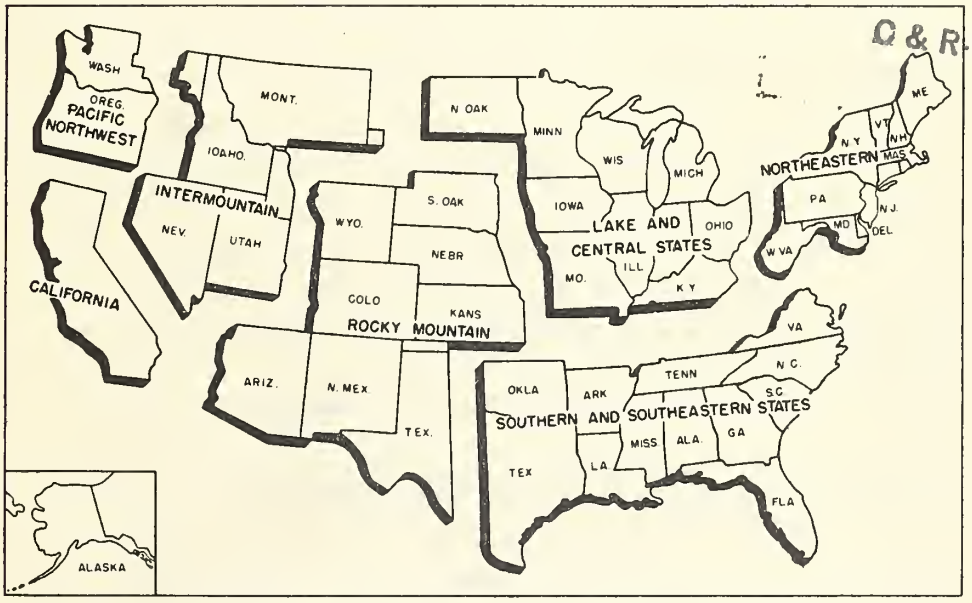
THE
MORE IMPORTANT FOREST INSECTS
IN 1954

A SUMMARY OF REGIONAL CONDITIONS



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A SUMMARY OF CONDITIONS

Prepared by the Division of Forest Insect Research

INTRODUCTION

The status of major insect pests throughout the forested regions of the Nation in 1954 was determined through cooperative surveys by federal land-managing agencies, state forestry and conservation organizations, private land-owners and lumber operators, and other individuals. This summary of insect conditions during the year was compiled from reports that have been made available to date. Although other reports were received of insect outbreaks in local areas, they were of minor importance and for that reason are not included in this summary. To facilitate reference to insect conditions in different parts of the country, the status of pests has been assembled on a regional basis.

CONDITIONS IN BRIEF

Infestations of many of the most important forest insects in the country increased in scope and severity during 1954 over that experienced during the past few years.

1. The spruce budworm was epidemic throughout most of the mixed conifer and spruce-fir forests of the Nation. Outbreaks were most severe in the Pacific Northwest and in the Rocky Mountain states. A new infestation in the Lake States, the first in many years, was found on the Keweenaw Peninsula in northern Michigan.

2. Discovery of the gypsy moth in the vicinity of Lansing, Michigan, during the year represented the first record of this major pest outside of the northeastern states since its introduction into the United States in 1869.

3. Bark beetles and engraver beetles continued in outbreak numbers in most of the coniferous forests of the Nation and caused severe loss of valuable timber in the fir forests of the Northwest; the spruce and fir forests in the northern and southern Rocky Mountains; and the pine stands in the South and West.

4. Several species of defoliating insects occurred in epidemic proportions in many areas in all regions. Outbreaks of pine sawflies occurred in the South and West; tent caterpillars in the Northeastern and Lake States; and needleminer infestations in California.

5. Twig and terminal-feeding insects continued to be major pests in most areas of forest regeneration.

6. Prompt action by forest protection agencies in applying suppressive measures for control averted major loss of timber in many areas. Large scale control was directed against the Engelmann spruce beetle in Idaho, Montana, and Colorado; the Douglas-fir beetle in Oregon; pine bark beetles in the southern and western regions; and the gypsy moth in Michigan, New England, and New York.

CONDITIONS IN CALIFORNIA

With three notable exceptions, conditions of forest insects in California were at the same comparatively low level as they were during 1953. The exceptions are: (1) the Douglas-fir beetle, currently epidemic in Douglas-fir stands of the north coast and now causing heavy losses in old growth stands; (2) the lodgepole needleminer-mountain pine beetle complex in Yosemite National Park, which is creating another ghost forest in the high country lodgepole pine; and (3) the fir engraver beetle, which is causing heavy scattered losses throughout the Sierra. Mountain pine beetle-caused losses in sugar pine remain at a high endemic level throughout most of the west-side Sierra. Serious damage by the western pine beetle and pine engravers throughout most of the pine belt was noteworthy by its absence. Bark-beetle losses in southern California showed a decided improvement generally, but the California flatheaded borer in Jeffrey pine continued to exact a heavy toll, particularly in areas where no control has been attempted. Both sugar pine and Douglas-fir cone crops were hard hit by cone and seed insects again during the year.

THE DOUGLAS-FIR BEETLE (Dendroctonus pseudotsugae Hopk.) - Heavy Douglas-fir losses due to the Douglas-fir bark beetle are occurring throughout an estimated 200,000 acres in the Klamath River and Trinity River drainages. Surveys in late June and July indicate a probable total loss of 100,000,000 board feet. This infestation increased considerably over last year, and at present possesses a potential capable of causing further severe losses should conditions continue to favor high insect populations. Steps are being taken to shift logging operations into areas of heavy loss so as to salvage as much of the beetle-killed timber as possible.

THE LODGEPOLE NEEDLEMINER (Recurvaria milleri Busck) - The lodgepole needleminer was recorded in epidemic proportions on approximately 46,000 acres in Yosemite and Kings Canyon National Parks. Populations were found to be at high levels and no downward

trend in infestations was noted during the season. The current outbreak is believed to have started in 1945 and has been on the increase since that time. Although the needleminer is capable of causing tree mortality, this seldom happens because of the rapidity with which defoliated trees are attacked and killed by the mountain pine beetle.

THE MOUNTAIN PINE BEETLE (Dendroctonus monticolae Hopk.) - Tree mortality caused by the mountain pine beetle increased during 1954, particularly in lodgepole pine that was severely defoliated by the needleminer. The insect continued to exact heavy losses in second-growth ponderosa pine on the east shore of Lake Tahoe, Nevada, and severe damage was reported in sugar pine seed trees from the Sierra Nevada Range in the central part of California.

THE CALIFORNIA FLATHEADED BORER (Melanophila californica Van Dyke) - The California flatheaded borer has been responsible for heavy losses in Jeffrey pine stands in southern California for many years and infestations have been particularly severe since 1952. Current infestations on 25,000 acres appear to be on a level consistent with conditions experienced during 1953. The selective removal of high risk trees from the stand is being used as a measure for control.

THE JEFFREY PINE BEETLE (Dendroctonus jeffreyi Hopk.) - Jeffrey pine losses in portions of Mono County due to the Jeffrey pine beetle, in conjunction with attacks by the California flatheaded borer, increased over previous years. Successful control of infestations is being obtained by removing high risk trees through selective cuttings. In areas benefited by light logging, losses have been reduced from a high level of 250 to 15 board feet per acre.

THE FIR SAWFLY, Neodiprion sp.- Fir sawfly damage is in evidence throughout most of the Sierra Nevada Mountains extending from the North Warner Mountains in Modoc County to the Sierra National Forest in the south. Although damage is widespread, serious tree losses have not been reported. The heavy defoliation which occurred within the LaPorte area during the past two years has died down, primarily as a result of a native virus disease affecting the sawfly larvae.

CONE AND SEED INSECTS, Conophthorus beetles and seed chalcids - Heavy losses in cones and seeds of Douglas-fir and sugar pine, caused by various cone and seed insects, were reported from most portions of the state. Preliminary sampling of the damage to Douglas-fir cones and seeds showed losses ranging from 53 to 89 percent. Damage to the sugar pine seed crop was somewhat spotty, varying with little damage in some areas to very serious damage in others.

CONDITIONS IN THE PACIFIC NORTHWEST

The spruce budworm, Douglas-fir beetle, and silver fir beetle continue to be the most serious insect problems in the forests of Oregon and Washington. However, several other major pests were found in epidemic proportions during the year, among which is a serious outbreak of the balsam woolly aphid attacking Pacific silver fir in southern Washington.

THE DOUGLAS-FIR BEETLE (Dendroctonus pseudotsugae Hopk.) - The Douglas-fir beetle epidemic remains aggressive in Oregon and Washington forests and survey results show heavy infestations on 5,071,000 acres. A recent summary of tree mortality in the high-value coastal forests revealed that more than 3 billion board feet of timber have been killed since the outbreak began in 1950. In addition to the killing by the beetle, there has been an estimated 10 billion board feet of blowdown of Douglas-fir which has provided the breeding grounds for the epidemic. In most control areas the infestation is declining. However, in the eastern part of both states where the killing is associated with defoliation by the spruce budworm, tree mortality continues to be severe.

SILVER FIR BEETLE (Pseudohylesinus spp.) - The area and intensity of silver fir beetle infestations in the Washington Cascades increased during 1954. Infestations are now found on 650,230 acres, a majority of which is moderately or heavily infested. A special survey during the year revealed that the beetles have been responsible for a total loss of 528,000,000 board feet of timber, nearly 10 percent of the total stand volume in the areas affected. In addition to silver fir beetle outbreaks in southern Washington, trees are also being attacked by the balsam woolly aphid which is resulting in a particularly bad situation.

THE WESTERN PINE BEETLE (Dendroctonus brevicomis Lec.) - The extent and intensity of infestations of the western pine beetle in Oregon and Washington were sharply down from conditions during 1953. A few centers of heavy loss remain on the Deschutes National Forest and the Yakima Indian Reservation in Oregon. Attention to removal of trees that are of high risk to beetle attack during the normal course of logging operations is steadily reducing the hazard of loss to western pine beetle attack.

THE MOUNTAIN PINE BEETLE (Dendroctonus monticolae Hopk.) - The recorded damage caused by the mountain pine beetle in all tree species susceptible to attack in Oregon and Washington declined from 322,400 acres in 1953 to 207,120 acres in 1954. The extensive outbreak on the Chiwawa River drainage area, Wenatchee National Forest, Washington,

continued unabated during the year. The large center of activity by this bark beetle in the vicinity of Wanoga Butte on the Deschutes National Forest in Oregon continued in epidemic status. However, logging has reduced the outbreak in ponderosa pine in the forest areas near Baker, Oregon.

THE FIR AND PINE ENGRAVER BEETLES, Ips and Scolytus spp. - The engraver beetles attacking true firs and the Ips species attacking ponderosa pine declined in intensity during the year. Scolytus infestations in fir occur primarily in inaccessible locations along the crest of the Cascade Mountain range where the timber is largely of non-commercial quality. Ips killing in ponderosa pine was reduced to a-below-normal level for the region.

THE ENGELMANN SPRUCE BEETLE (Dendroctonus engelmanni Hopk.) - A large increase in infestations of the Engelmann spruce beetle occurred in Washington during the year. The greatest increase occurred on a portion of the Snoqualmie National Forest where infestation centers have been present since 1952. Except for the excellent spruce stands in the American River drainage where current infestations are most severe, Engelmann spruce stands in Oregon and Washington are too scattered to warrant large expenditures needed for direct control.

THE SPRUCE BUDWORM (Choristoneura fumiferana (Clem.)) - The spruce budworm epidemic that developed in the Douglas-fir and true fir forests of Oregon and Washington in 1944 is still in progress. Through continued action programs in control, the epidemic has been reduced from a peak of 2,276,000 acres to 1,034,440 acres in 1954. The trend of budworm infestations is decidedly upward in all unsprayed areas. In the Blue Mountain Region of eastern Oregon, timber that has been severely weakened by budworm defoliation has subsequently been attacked and killed by the Douglas-fir beetle.

THE BALSAM WOOLLY APHID (Chermes piceae (Ratz)) - Pacific silver fir in southern Washington was found to be seriously attacked by an insect tentatively identified as Chermes piceae. A total of 129,920 acres is known to be heavily infested and an additional 146,240 acres was found to be infested by Chermes and silver fir beetle combined. This aphid has been attacking and killing grand fir in the Willamette Valley in Oregon since about 1930 but not until 1954 had it been reported on silver fir growing under forest conditions. Experience with this insect in eastern Canada indicates that direct measures for control are not practicable.

SPRUCE APHID (Neomyzaphis abietina (Wlkr.)) - Spruce aphid infestation of Sitka spruce along the Oregon and Washington coast reached a peak in 1953 and declined in 1954. The recorded epidemic infestation in 1953

was 22,600 acres as compared with 4,480 acres in 1954. Practically all of this year's epidemic infestation was in the Willapa Bay area in Washington and was a twofold increase in acreage for that state. The infestation in Oregon was much reduced in 1954.

LODGEPOLE PINE SAWFLY (Neodiprion sp.) - The lodgepole pine sawfly outbreak that covered 20,000 acres in 1952 and 69,700 acres in 1953 on the Willamette and Deschutes National Forests in Oregon has subsided without any appreciable tree killing. A few of the most seriously defoliated trees have succumbed to attacks by bark beetles, but no aggressive outbreak of beetles has developed in the sawfly defoliation area. Cool weather and above normal rainfall favored tree growth in 1954; consequently most of the defoliated trees put on good needle growth and apparently will recover.

Ground examinations in 1954 showed the sawfly to be rather generally distributed in the affected area. However, feeding was light and no epidemic infestation was recorded.

The decline of the sawfly outbreak is attributed to parasites, predators and other factors of natural control acting in combination with suspended development (diapause) of a large part of the sawfly population. In the fall of 1953 most of the sawflies remained in their cocoons in the soil rather than emerging and laying eggs as they normally do. The relatively few overwintering eggs produced the light brood of 1954. The larvae in the cocoons laid over; some emerged in the fall of 1954; some are still in the soil; and many succumbed to insect parasites, rodents, disease, and weather. As a result of this sequence of events the outbreak appears to be ended.

CONDITIONS IN THE INTERMOUNTAIN STATES

The year 1954 was one in which damage to the forest resources in the Intermountain States continued at an unprecedented high level. This was in the form of extensive mortality of mature trees from bark beetle attacks and of widespread mortality of immature trees and partial defoliation of mature and immature trees by leaf-feeding insects.

THE ENGELMANN SPRUCE BEETLE (Dendroctonus engelmanni Hopk.) - For the third successive year, the Engelmann spruce beetle occurred in epidemic proportions over large areas in northwestern Montana and northern Idaho. Efforts to control the widespread and scattered outbreak, chiefly through logging, were begun in 1952 and continued on a massive scale through 1954. As a result of the control operation and a decline of beetle population resulting from natural control factors, there was a general downward trend in the spruce beetle infestation during the year. Several relatively small outbreak areas of epidemic infestations in southwest Idaho and southern Utah are being controlled by logging infested trees.

THE MOUNTAIN PINE BEETLE (Dendroctonus monticolae Hopk.) - An abnormal amount of ponderosa pine mortality resulting from attacks by the mountain pine beetle occurred in the vicinity of Ovando and Lincoln, Montana. The infestations were not materially above those which occurred in the area during 1953 and there was no grouping of infested trees to signal epidemic conditions. Infestations in ponderosa pine are at a low ebb in all other areas for which reports are available. Several new outbreaks of this insect were reported in lodgepole pine in Montana and infestations on the north side of the Wasatch National Forest in Utah increased to epidemic size in several drainages. Broods in the infested trees indicate that heavier conditions of loss can be expected during 1955.

THE SPRUCE BUDWORM (Choristoneura fumiferana (Clem.)) - During the past few years the spruce budworm has increased to alarming proportions in Idaho and western Montana. Individual areas of infestation in Montana have increased in acreage to an extent that a solid block of infestation now covers most of the several national forests in that area. Spruce budworm populations were very large during the year and a majority of the trees are now heavily defoliated. Some loss of timber as a result of defoliation has occurred in areas of heavy budworm populations including the death of understory trees as well as top-killing and death of saw-log timber. Infestations of most severe proportions occur on approximately 600,000 acres in southwest Idaho and on nearly 2 million acres in North Idaho and Montana, including Yellowstone National Park. Plans are being made for direct control during 1955.

THE DOUGLAS-FIR BEETLE (Dendroctonus pseudotsugae Hopk.) - The Douglas-fir beetle continues to take a heavy toll of merchantable Douglas-fir from the forests of the Intermountain States. In some areas there has been a temporary cessation in the severity of infestations while in others the loss of timber continues. Infestations in Montana and northern Idaho are much reduced from conditions reported during 1952 and 1953. However, heavy losses were reported from the Boise and Payette National Forests in southwestern Idaho. Foresters regard the Douglas-fir beetle as one of the chief obstacles to the successful management of the forest resources of the region.

THE BLACK HILLS BEETLE (Dendroctonus ponderosae Hopk.) - There has been a persistent infestation of the Black Hills beetle in the ponderosa pine stands of the Dixie National Forest and Bryce Canyon National Park in southern Utah for a number of years. Several seasons of direct control operations have reduced the infestation on most of the area to below-normal status. However, a concentration of infestation occurs on approximately 52,000 acres and plans are being developed for continued control on this acreage.

THE DOUGLAS-FIR NEEDLE MIDGE, Cecidomyia sp.- The current status of the Douglas-fir needle midge outbreak in portions of Montana and Idaho has not been reported. However, damage to Christmas tree harvest areas was severe in many areas and since no efforts were made in direct measures for control, it is probable that populations have remained unchanged from prior years.

THE PINE WHITE BUTTERFLY (Neophasia menapia (F.&F.)) - The pine white butterfly reached epidemic proportions in the pine stands of southern Idaho during 1953. Due to the threat of heavy timber loss, prompt action was initiated for control and during 1954 aerial spraying was carried out on 255,000 acres. The outbreak was successfully controlled and the infestation is no longer active.

THE WESTERN PINE BEETLE (Dendroctonus brevicomis (Lec.)) - There was an increase in activity by the western pine beetle in southwestern Idaho and to some extent in the northern portion of the State. The concentration of loss caused by this major pest occurs primarily in portions of the Boise and Payette National Forests, with several areas showing above normal status in the general area where continued direct control measures are planned during 1955.

THE SOUTHWESTERN PINE BEETLE (Dendroctonus barberi (Hopk.)) - A rather serious infestation of the southwestern pine beetle occurs in the Charleston Mountain area of southern Nevada. This infestation is isolated from other susceptible host material and plans are being developed for control during 1955.

CONDITIONS IN THE ROCKY MOUNTAINS

Forest insects showed a noticeable upward trend throughout most of the forested areas in the Rocky Mountains during 1954. Of paramount importance was the new large-scale outbreak of Engelmann spruce beetle in southern Colorado and an intensification of damage caused by the spruce budworm in New Mexico.

THE ENGELMANN SPRUCE BEETLE (Dendroctonus engelmanni Hopk.) - The Engelmann spruce beetle returned to the status it held from 1939 to 1952 as the most destructive forest insect pest in the Rocky Mountains. The current outbreak on the Uncompahgre-San Juan National Forests in southern Colorado is attributed to a June 1950 windstorm which uprooted spruce trees over large areas. The spruce beetle population increased to epidemic proportions in this wind-damaged spruce and attacked and killed some 70 million board feet of timber on 24,000 acres in 1952 and 1953. A program of direct control was initiated during 1953 and continued this year. The intensity of the infestation has increased due to an unprecedented build-up of populations since 1952; however, very little spread in the outbreak occurred during 1954.

THE BLACK HILLS BEETLE (Dendroctonus ponderosae Hopk.) - Tree mortality caused by the Black Hills beetle continues at epidemic levels in parts of the Rocky Mountain region. Outbreaks of most serious proportions occurred in southern Colorado and in northern New Mexico although local centers of heavy loss also were reported from Wyoming and the Black Hills of South Dakota.

PINE ENGRAVER BEETLES, Ips spp. - Several species of pine engraver beetles reached epidemic status in many drought-stricken areas during the year, particularly in portions of New Mexico. Heavy Ips-caused losses were sustained in all age classes of trees where stand conditions have been degenerated as a result of prolonged drought. Salvage operations have been accelerated in these areas but logging thus far has not been able to keep pace with the rate at which timber is dying.

PINE BARK BEETLES, Dendroctonus spp. - The southwestern pine beetle (Dendroctonus barberi Hopk.) and associated species (D. convexifrons, D. approximatus, and D. arizonicus) were responsible for a majority of the loss in ponderosa pine in New Mexico and Arizona. The tree-killing caused by these bark beetles was concentrated in virgin stands and in the lower elevational zones of the ponderosa pine timber type. Operations to salvage the loss were initiated in most of the areas suffering severe tree-killing but no other direct action has been taken for possible control.

THE FIR ENGRAVER BEETLE (Scolytus ventralis Lec.) - The fir engraver beetle continued in epidemic status in the white fir stands of the Sandia Mountains in central New Mexico. Tree-killing in amounts ranging from 20 to 50 percent of the stand was common throughout the area; as much as 80 percent of the stand has been killed in canyons on the west side of the mountain range. In this epidemic, the engraver beetle has been able to build up large populations in trees that have been weakened from prior defoliation by spruce budworm, and prolonged drought.

THE DOUGLAS-FIR BEETLE (Dendroctonus pseudotsugae Hopk.) - Tree-killing as a result of attacks by the Douglas-fir beetle was widespread throughout the Rocky Mountains. A majority of the damage to Douglas-fir occurs in inaccessible areas where timber values are low. Losses have not been excessive on the better sites supporting Douglas-fir timber.

THE WESTERN BALSAM BARK BEETLE (Dryocoetes confusus Sn.) - Severe mortality of corkbark fir throughout the Alpine timber type in New Mexico and Arizona was caused by the western balsam bark beetle. Increasingly heavy damage to corkbark fir occurred in many areas, and groups of dead and dying firs in excess of 100 trees were common throughout the spruce-fir timber type.

THE SPRUCE BUDWORM (Choristoneura fumiferana (Clem.)) - Spruce budworm populations reached epidemic status on 870,000 acres of mixed conifer and spruce-fir forests in New Mexico and Arizona. Surveys showed that defoliation was severe on 65,000 acres in northern New Mexico with light to moderate defoliation occurring elsewhere. Tree-killing to date has been restricted largely to the understory but general mortality of saw-log timber is expected over much of the epidemic area if present infestation conditions continue. Plans are being made for direct control of the outbreak by aerial application of formulated DDT spray.

THE GREAT BASIN TENT CATERPILLAR (Malacosoma fragilis Stretch) - An outbreak of the Great Basin tent caterpillar that has occurred over extensive stands of aspen in northern New Mexico and to some extent in southern Colorado, since the late 1940's continued through 1954. Tree-killing as a result of defoliation has not been severe, but the pollution of streams and the nuisance created by multitudes of the caterpillar, continued to hamper the use of the infested areas for recreation.

THE PINE WHITE BUTTERFLY (Neophasia menapia (F. & F.))- A heavy flight of the pine white butterfly was reported from the Coconino Plateau in Arizona during the year. This is the first report of abnormal activity of this insect in the southwestern states, although it has occurred in small numbers annually throughout most of the pine stands in the area. Neither abnormal defoliation or butterfly eggs were found in any area where the heavy flight was reported.

CONDITIONS IN THE CENTRAL STATES AND LAKE STATES

The reappearance of heavy infestations of the spruce budworm in northern Michigan and the discovery of a gypsy moth infestation in an area near Lansing, Michigan, were events of major importance during the year. Prompt action was taken for control of the gypsy moth and surveys are being planned to determine the needs for control of the budworm. A vast reduction occurred in populations of the forest tent caterpillar in the Lake States but several other tree defoliators increased in numbers and caused severe damage in many areas.

THE SPRUCE BUDWORM (Choristoneura fumiferana (Clem.)) -A heavy infestation of the spruce budworm, covering approximately 2,500 acres, was discovered on a portion of the Keweenaw Peninsula in northern Michigan during 1954. This is the first reported presence of this major forest pest in the Lake States in many years. Light populations were also found in susceptible timber types at many locations in the Superior and Chippewa National Forests. It is probable that the species is present throughout a majority of the fir stands from western Shawano County in Wisconsin to the Keweenaw Peninsula in Michigan.

THE JACK-PINE BUDWORM (Choristoneura pinus Free.) - The jack-pine budworm has been an important forest pest in the Lake States for the past 30 years. During 1954, populations of this insect were at a low ebb in lower Michigan, whereas increased infestations were reported from the Upper Peninsula and in northeastern Minnesota. An increase in infestation also occurred in northeastern Wisconsin. While there has been little or no tree mortality in any of the areas of infestation to date, measures for control to prevent loss may become necessary in some places during 1955.

THE FOREST TENT CATERPILLAR (Malacosoma disstria Hbn.) - The forest tent caterpillar remained active in many areas throughout the Lake States. However, a vast reduction in populations occurred throughout Minnesota and Michigan and visible defoliation was not noticed appreciably in any area of the two states during the year. Tree defoliation was severe in northwestern Wisconsin, although a high degree of parasitism was noted in the larval brood. Reduced populations are expected in 1955.

PINE SAWFLIES, Neodiprion and Diprion spp. - In general, there has been a slight reduction in pine sawfly populations in the Lake States in recent years. Generally speaking, the European pine sawfly (N. sertifer (Geoff)) continued to fit this pattern in Michigan having caused less injury than it did in 1953; however, populations were at high levels in some susceptible stands. A first report of this insect in southern Wisconsin and southeastern Iowa was received and heavy defoliation was reported in pine plantations in Ohio, Indiana and Missouri. Diprion simile (Htg.) increased in numbers in many of the white pine stands in Minnesota and caused an appreciable amount of defoliation in some areas.

THE LARCH SAWFLY (Pristiphora erichsonii (Htg.)) - The infestation of larch sawfly which has occurred in northern Minnesota since the late 1940's declined in intensity during 1954. Although severe defoliation was noted in many areas of the State during the year, complete defoliation occurred primarily northwest and northeast of Red Lake and in the north central part of St. Louis County. Tree mortality was not observed during the year. In Wisconsin, infestations of most severe proportions occurred in the western portion of the State. The sawfly increased in abundance in Michigan but there was no heavy defoliation reported.

THE SARATOGA SPITTLEBUG (Aphrophora saratogensis (Fitch)) - Although the range of the Saratoga spittlebug includes the eastern and southeastern United States, excessive damage caused by this forest pest is known only from portions of Wisconsin and Michigan. Infestations in both states were somewhat reduced during 1954 except in local areas in northern Michigan and on approximately 15,000 acres in Wisconsin.

THE PINE TORTOISE SCALE (Toumeyella numismaticum (P. & M.)) - The pine tortoise scale often is a serious pest of jack pine throughout the Lake States. During 1954, infestations of this insect developed to epidemic proportions in Wisconsin and Michigan and heavy tree mortality occurred in many areas. Prompt action on the part of state and private agencies in initiating control, coupled with a high degree of natural control in the scale population, resulted in a substantial reduction of infestations in Wisconsin. However, epidemic conditions existed in

portions of Schoolcraft County in Michigan; also moderate to heavy infestations were reported from five counties in Minnesota.

THE WALKINGSTICK (Diapheromera femorata(Say)) - Heavy feeding by the even-year brood of the walkingstick was reported from northeastern and western Wisconsin and defoliation was noticeable in a number of localities in Michigan. Infestations were light in Minnesota.

THE EUROPEAN PINE SHOOT MOTH (Rhyacionia buoliana (Schiff)) - Populations of the European pine shoot moth have increased in many areas in the Lake States during the past few years and infestations of serious proportions were reported in parts of Michigan and Wisconsin during 1954. Direct measures for control are planned in some areas to reduce infestations and loss.

THE WHITE PINE WEEVIL (Pissodes strobi (Peck)) - The white pine weevil was reported to be well distributed on a variety of pine hosts in the Lake States. As much as 60 percent of the terminals of four pine species were damaged in local areas in Wisconsin. Heavy infestations were also reported from Michigan, whereas damage was scattered and generally of light intensity in all areas in Minnesota.

THE YELLOW-HEADED SPRUCE SAWFLY (Pikonema alaskensis (Roh.)) - This sawfly was abundant in many of the spruce-fir stands throughout northern Minnesota. A moderate infestation was reported from one area in Wisconsin and from the Keweenaw Peninsula in upper Michigan.

THE VARIABLE OAK LEAF CATERPILLAR (Heterocampa manteo (Dbldy.)) - High populations of this insect developed over large areas in northwestern Minnesota. However, inasmuch as a majority of defoliations occurred late in the season, no serious damage was caused to the affected trees.

THE BIRCH LEAF SKELETONIZER (Bucculatrix canadensisella Chamb.)- A general epidemic of this insect occurred on birch throughout the northern part of the Lake States. Tree damage that resulted from the outbreak was not serious due to the lateness of the season when defoliation occurred.

THE SMALLER EUROPEAN ELM BARK BEETLE (Scolytus multistriatus (Marsh)) - This insect pest, a vector of the Dutch elm disease, has increased in numbers in many parts of the Lake States during past years and during 1954 was very abundant in several areas in southern Wisconsin. Results of special surveys to determine incidence of attack in other areas were not received, except from southwest Missouri. In that region from 4 to 10 percent of the American elms were attacked in local areas.

THE GYPSY MOTH (Porthetria dispar (L.)) - The gypsy moth was discovered in Lansing, Michigan, in May, 1954. Prior to this time, this insect has

not been reported in any area outside of the northeastern states since its introduction into the United States in 1869. Immediate action on the part of Federal, State, and private agencies resulted in highly successful control of this major pest on nearly 100,000 acres. Moth collections were made at four points within a radius of 25 miles west of the control area, indicating possible spread of the insect from the initial outbreak center. Survey results are as yet incomplete and the status of infestations in adjacent areas is not now known.

THE LARCH CASEBEARER (Coleophora laricella (Hbn.)) -Populations of the larch casebearer declined throughout most of the Lake States; however heavy defoliation was reported from the northeast and central portions of Wisconsin. The insect was lightly distributed in Minnesota.

CONDITIONS IN THE SOUTHERN AND SOUTHEASTERN STATES

The severe drought that has continued throughout the southern and southeastern states for the past few years undoubtedly was a major factor in favoring increased bark beetle activity during 1954. Prompt action on the part of forest land-owners and managers in control prevented what otherwise might have developed into catastrophic outbreaks of the southern pine beetle and the black turpentine beetle. Present infestations are such as to require a continuation of control efforts in 1955 to avert serious losses.

THE SOUTHERN PINE BEETLE (Dendroctonus frontalis Zimm.) - Populations of the southern pine beetle continued at an epidemic level in the mountains of western North Carolina and in eastern Tennessee. Beetle activity, resulting in severe tree-killing, also occurred in eastern and central North Carolina, in Virginia, in southwest Mississippi, and in central and northern Alabama. Unless infestations are reduced by natural control factors, timber losses are expected to continue into 1955. It is expected that an additional build-up of beetle populations will occur in blow-down trees resulting from Hurricane Hazel in the southeastern states.

PINE ENGRAVER BEETLES, Ips spp. - The widespread drought that has prevailed over the southern and southeastern states during the past few years has also resulted in a large-scale build-up of Ips beetle populations in all areas. Losses resulting from engraver beetles during the year were most severe in eastern Texas, southern Georgia and northern Florida.

THE BLACK TURPENTINE BEETLE (Dendroctonus terebrans(Oliv.))- The black turpentine beetle has for several years been a major pest of pines in

Mississippi, Alabama, Louisiana, eastern Texas, and to some extent, in northern Florida. Current losses caused by this pest were much less than those sustained during 1952 and 1953 due to active work by State and private agencies in control.

PINE SAWFLIES, Neodiprion spp.- Damage to southern pines by several species of pine sawflies was not serious in the southern and southeastern states during 1954. Light infestations were recorded in portions of South Carolina, Virginia, Alabama, Arkansas, and Louisiana. The heavy infestation of Neodiprion exitans which caused severe defoliation over some 70,000 acres in southern Alabama during 1952 was reduced to endemic status through natural control factors in 1954.

THE FALL CANKERWORM (Alsophila pometaria (Harr.)) - Severe defoliation of Appalachian hardwoods by the fall cankerworm occurred in portions of North Carolina. Infestations of this insect have been persistent for three years and artificial measures for control may be necessary in heavily used recreational areas during 1955.

PINE TIP MOTHS - The pine tip moths (Rhyacionia frustrana (Comst.)) and (R. rigidana (Fern.)) were reported as causing severe injury to loblolly pine throughout the Piedmont Plateau area and in seed tree orchards elsewhere in the southeastern states.

THE PALES WEEVIL (Hylobius pales (Hbst.)) - The pales weevil caused severe damage to seedling pines in areas where clear cutting practices have been followed by immediate planting. Damage caused by this insect increased over that reported in previous years.

THE FOREST TENT CATERPILLAR (Malacosoma disstria Hbn.) - Approximately 60,000 acres of bottomland gum were defoliated by the forest tent caterpillar in the vicinity of Mobile, Alabama, during the spring months of 1954. Trees in the affected area refoliated during the summer and no tree mortality occurred as a result of the infestation.

CONDITIONS IN THE NORTHEASTERN STATES

A large-scale outbreak of the gypsy moth in New England and New York was brought under control during the year by the combined action of an extensive aerial spray program, a high degree of parasitism, and a virus disease which affected the larval population. A severe infestation of the forest tent caterpillar occurred in New York, Vermont, New Hampshire, and Maine.

THE SPRUCE BUDWORM (Choristoneura fumiferana (Clem.)) - Defoliation caused by the spruce budworm showed a marked reduction in Maine and northern Vermont. Surveys of budworm egg masses in both states indicate that a light infestation can be expected in all areas during 1955. Cooperative control efforts during the year were highly successful in suppressing a local outbreak in the vicinity of Madawaska Lake, Aroostook County, Maine.

THE FOREST TENT CATERPILLAR (Malacosoma disstria Hbn.) - Severe outbreaks of the forest tent caterpillar were recorded in New York, Vermont, New Hampshire, and Maine. The defoliated area in New York covered about 15 million acres whereas that in Vermont was limited to some 200,000 acres. A majority of all areas were lightly infested. Direct control measures were successfully applied on approximately 20,000 acres of sugar maple orchards in Vermont and in areas devoted to heavy recreational use in New York.

THE GYPSY MOTH (Porthetria dispar (L.)) - The combined forces of natural and artificial control resulted in a large scale reduction of the gypsy moth in New England and New York. Aerial application of formulated DDT sprays by state organizations successfully controlled the insect on nearly 1-1/2 million acres. This control effort, plus a high degree of parasitism and a virus disease affecting the larval population, resulted in a drastic reduction of infestations in all areas.

THE RED PINE SCALE (Matsucoccus resinosae) - This scale insect continued as a major pest on red pine in portions of Connecticut and New York. Natural factors reduced scale populations in some areas but infestations remained at relatively high levels in other localities. No new centers of infestations were discovered in 1954.

THE WHITE PINE WEEVIL (Pissodes strobi (Peck)) -General observations indicate that heavy attacks of white pine weevil occurred throughout New York. Less severe infestations were recorded in all of the other northeastern states.

THE BALSAM WOOLLY APHID (Chermes piceae Ratz) - An appreciable increase in damage caused by the balsam woolly aphid occurred in the balsam fir stands in Maine, New Hampshire, and Vermont. Trees of larger diameter were most vulnerable to attack by this insect. Single trees, as well as trees in small groups, were killed over wide areas.

THE BEECH SCALE (Cryptococcus fagi (Baer)) -The combined attack of the beech scale and a nectria fungus caused an alarming amount of beech mortality in western Maine, northern New Hampshire and in the

Catskill Mountains of New York. Heavy attacks of the scale and the fungus were found for the first time in Vermont.

SHOOT AND TIP MOTHS -The European pine shoot moth (Rhyacionia buoliana (Schiff)) and the Nantucket pine tip moth (R. frustrana (Comst.)) continued to cause severe damage to young pine stands in all northeastern states. Infestations were so severe in some areas that the planting of red pine was abandoned.

SAWFLIES - Outbreaks of several species of Neodiprion sawflies occurred in pine stands in portions of Maryland, New York, New Jersey and Connecticut. Application of formulated insecticides on most species and the liberation of a virus disease affecting one species of sawfly larvae gave excellent results in control.

CONDITIONS IN ALASKA

Forest insect activity throughout the Territory of Alaska was less extensive than during 1953. With the exception of the black-headed budworm epidemic on the Tongass National Forest, no serious infestations were reported.

THE BLACK-HEADED BUDWORM (Acleris variana Fern.) - The outbreak of black-headed budworm covered approximately 6,340,000 acres of the Tongass National Forest, a reduction of about 10 million gross acres from that reported in 1953. This outbreak was situated within the northern portion of the Tongass. Throughout the southern portion, and in the Yakutat area, budworm activity died out during the year. Defoliation of Sitka spruce and western hemlock occurred on 400,000 acres in the Glacier Bay National Monument, but infestations were not heavy and little tree damage occurred.

THE HEMLOCK SAWFLY (Neodiprion tsugae Midd.) - The outbreak of hemlock sawfly which has extended over much of the southern half of the Tongass National Forest in past years died out during 1954. The sawfly infestation continued in the northern portion of the Tongass but populations were light in most areas.

THE WESTERN RUSTY TUSSOCK MOTH (Notolophus antiqua L.) - The western rusty tussock moth was very prevalent in the vicinity of Anan Creek and Neets Bay. Damage to hemlock was not severe.

CEDAR BARK BEETLES (Phloeosinus spp.) - Cedar bark beetles were much in evidence in attacks on western red and Alaska yellow cedars. Infestations appeared to be most common where cedar was growing on muskegs and on the poorer sites.

GEOMETRID DEFOLIATOR - An outbreak of an unidentified Geometrid (subfamily Larentiinae) occurred on Sitka alder in the vicinity of Valdez. Defoliation was almost complete over several thousand acres. However, in mid-summer, symptoms of disease were noted in the larval population and it may be that the outbreak will be greatly reduced next year.

THE LARCH BARK BEETLE (Dendroctonus simplex Lec.) - Vast areas of larch in the upper Kuskokwim River drainage died during 1953 from unknown causes. Examination of some of these larch stands revealed that the larch bark beetle was distributed lightly in most of the trees. It was not determined whether or not the insect was directly responsible for the death of the trees.

Washington 25, D. C.
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